

**NAVSEA**

DAHLGREN

*N Dept.*

V & V  
A

VERIFICATION

VALIDATION

ACCREDITATION

**VV&A  
CHALLENGES**

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# OUTLINE

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- Objective
- The Team
- Plan Structure
- VV&A Challenges
- Resolutions
- Summary



# OBJECTIVE

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- Provide insight into VV&A Challenges encountered while developing the M&S accreditation process for Navy Area TBMD and NTW TBMD Programs
- Share Resolutions



# THE TEAM



## Plan Written by M&S VV&A Working Group:

- PMS 452
  - NTW SE&I
  - Anteon
- PMS 451
  - SPA
- PMS 400B
  - Logicon
  - LM NE&SS



- PMS 422
  - JHU/APL
- COMOPTEVFOR
- NAVSEA DD
  - EG&G
- PEO TSC MSTA



# PLAN STRUCTURE

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- 1. Program Description
- 2. Purpose
- 3. Scope
- 4. General Accreditation Approach
- 5. VV&A Iterations Throughout Program Lifecycle
- 6. Maintenance
- 7. Example M&S Accreditation POA&M



# VV&A CHALLENGES

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- Accreditation Authority
  - Who will be the AA?
  - Who will designate the M&S for accreditation?
- COMOPTEVFOR Participation
  - How will COMOPTEVFOR be involved?
- M&S Requirements
  - Do they exist?
  - Where do they come from?



# RESOLUTIONS

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## ACCREDITATION AUTHORITY

- Governing Principles of Accreditation
- Accreditation Authority Policy
- Joint Accreditation



# ACCREDITATION AUTHORITY



## Governing Principles of Accreditation

- Ensure Mission Program Offices (MPOs) leverage existing Product Program Offices (PPOs) M&S expertise to the greatest extent possible
- Place authority in M&S matters consistent with the accountability for the proper use of M&S





# ACCREDITATION AUTHORITY

## AA Policy For PMS 452



	Class 1	Class 2	Class 3	Class 4	Class 5
<b>Examples:</b>	SM3 6DOF, Medusa	SM3 6DOF, Medusa	ETEDS	EADSIM	Not Determined
<b>Accreditation Authority</b>	PMS 400B or PMS 422	PMS 400B or PMS 422 and PMS 452	PMS 452	PMS 452	COMOPTEVFOR
<b>Accreditation Review Panel</b>		PMS 400B or PMS 422 (Lead), PMS 452 (Participate)	PMS 452 (Lead), PMS 400B, 422 (Participate)	PMS 452 (Lead), PMS 400B, 422 (Participate)	PMS 452 (Lead), PMS 400B, 422 (Participate)
<b>V&amp;V Agent (SCP)</b>					
<b>M&amp;S Developer (MSP)</b>	Raytheon/ APL, LM	Raytheon/ APL, LM	Raytheon, LM	TBE, APL	

**Class 1 – Models Developed by PPO, Used for Product Development**

**Class 2 – Models Developed by PPO, Used by PMS 452**

**Class 3 – System / Integrated Models**

**Class 4 – Force-on-Force / Theater Models**

**Class 5 – Models for OT**



# ACCREDITATION AUTHORITY

## AA Policy for PMS 451



	Class 1	Class 2	Class 3	Class 4
<b>Examples:</b>	SM3 6DOF, Medusa	SM3 6DOF, Medusa	EADTB	Not Determined
<b>Accreditation Authority</b>	PMS 400B or PMS 422	PMS 400B or PMS 422 and PMS 451	PMS 451	COMOPTEVFOR
<b>Accreditation Review Panel</b>		PMS 400B or PMS 422 (Lead), PMS 451 (Participate)	PMS 451 (Lead), PMS 400B, PMS 422 (Participate)	PMS 451 (Lead), PMS 400B, PMS 422 (Participate)
<b>V&amp;V Agent (SCP)</b>				
<b>M&amp;S Developer (MSP)</b>	Raytheon/ APL, LM	Raytheon/ APL, LM	Raytheon, LM	

- Class 1 – Models Developed by PPO, Used for Product Development**
- Class 2 – Models Developed by PPO, Used by PMS 451**
- Class 3 – Models Used solely by PMS 451**
- Class 4 – Models for OT**



# ACCREDITATION AUTHORITY



## Joint Accreditation

- MPO will provide specific M&S usage requirements to the PPO as soon as known
- If VV&A is out of the scope of PPO planning, MPO coordinates resourcing
- MPO will participate in PPO ARP when joint use M&S is discussed
- Mission Program and Product Program Managers sign Accreditation Decision Letter



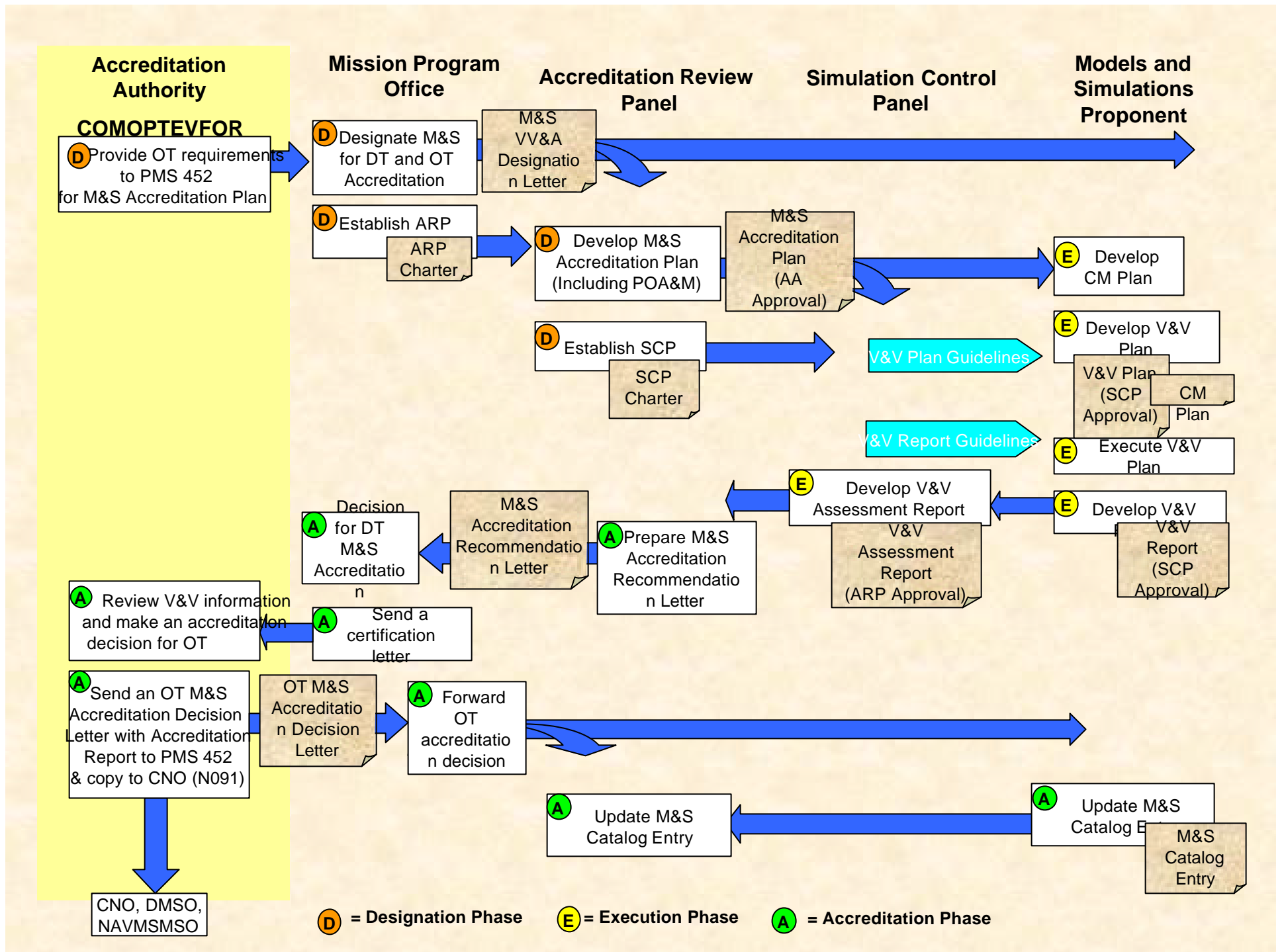
# RESOLUTIONS

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## COMOPTEVFOR

- AA for OT
- Early Involvement in M&S VV&A
- COMOPTEVFOR to provide M&S requirements to MPO as soon as possible
- OT Accreditation Decision Letter
- OT Accreditation Report





# RESOLUTIONS

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## M&S REQUIREMENTS

- M&S Requirements and Acceptability Criteria are provided by the AA/ARP
- The M&S Requirements are to be compliant with the ORD/SRD Requirements
- COMOPTEVFOR provides Mission Program Offices with M&S requirements that need to be satisfied for OT
- Mission Program Office approves the M&S requirements for DT
- Product Program Office provides M&S Requirements to the MSP



# SUMMARY

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- Accreditation Process Flexibility Contributed to a Practical VV&A Implementation Among the Various Program Offices Under the PEO TSC Structure





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# Backup Slides





# DEFINITIONS

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- Accreditation Authority (AA) - An Individual Occupying a Position With the Appropriate Rank, Grade, Responsibility And/or Authority to Accredite a Model, Simulation, or Federation of Models And/or Simulations for a Particular Purpose or Purposes. For Design, Development, and Developmental Testing, This Authority Resides With the Program Managers. For Operational Testing, This Authority Resides With the Commander, Operational Test and Evaluation Force.
- Accreditation Review Panel (ARP) - The Program Office Organization Responsible for Managing the Gathering and Review of V&V Information and Presenting an Accreditation Recommendation to the Program Office on All Program Controlled M&S. It Is Composed of Program Office Representatives and Subject Matter Experts As Appropriate. The ARP Establishes the SCP.



## DEFINITIONS (CONTINUED)

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- Simulation Control Panel (SCP) - A Technical Review Panel Established by the ARP to Guide the Gathering of V&V Information. It Provides the Independent Oversight of the Execution of the V&V Plan and Reviews the V&V Efforts of the MSP.
- Modeling & Simulation Proponent (MSP) - A Developer, Maintainer, Modifier, User, or Sponsor of M&S Applied to Navy Programs. The MSP Provides the Required V&V Information, Conducts V&V Activities, and Supports the ARP and SCP As Tasked.



## DEFINITIONS (CONTINUED)



- **ACCREDITATION:** Accreditation is the official determination that a model & simulation, hardware-in-the-loop, or land based test site is acceptable for use for a specific purpose.
- **VALIDATION:** Validation is the process of determining the degree to which a model (simulation) is an accurate representation of the real world from the perspective of the intended uses of the model.
- **VERIFICATION:** Verification is the process of determining that a model (simulation) implementation accurately represents the developer's conceptual description and specifications.



# VV&A PROCESS

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- Designation Phase
  - Designation of M&S
  - Approval of POA&M and M&S Accreditation Plan
  - Establish ARP and SCP
- Execution Phase
  - Approve V&V Plan
  - Execute V&V Plan
  - Develop V&V Report and V&V Assessment Report
- Accreditation Phase
  - Approve V&V Assessment Report
  - Approve Accreditation Recommendation
  - Update M&S Catalog Entry



# REFERENCES



## VV&A process is in compliance with:

- DOD Directive 5000.59, "DOD M&S Management," 4 January 1994
- DOD Instruction 5000.61, "DOD M&S VV&A", 29 April 1996
- SECNAV Instruction 5200.40, "VV&A of M&S," 19 April 1999
- PEO TSC Instruction 5200.3, "VV&A of M&S," 4 February 2000
- COMOPTEVFOR Instruction 5000.1, "Use of M&S in Operational Testing," 5 September 1995

